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Height and Weight Table for Girls.

ABOUT WHAT A GIRL SHOULD GAIN EACH MONTH.

Age:	Ounces.	Age:	Ounces.
5 to 8	6	14 to 16	8
8 to 11	8	16 to 18	4
11 to 14	12		

Height (inches).	5 yrs.	6 yrs.	7 yrs.	8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.	13 yrs.	14 yrs.	15 yrs.	16 yrs.	17 yrs.	18 yrs.
39	34	35	36	......	......	......	......	......	......	......	......	......	......	......
40	36	37	38	......	......	......	......	......	......	......	......	......	......	......
41	38	39	40	......	......	......	......	......	......	......	......	......	......	......
42	40	41	42	43	......	......	......	......	......	......	......	......	......	......
43	42	42	43	44	......	......	......	......	......	......	......	......	......	......
44	44	45	45	46	......	......	......	......	......	......	......	......	......	......
45	46	47	47	48	49	......	......	......	......	......	......	......	......	......
46	48	48	49	50	51	......	......	......	......	......	......	......	......	......
47	......	49	50	51	52	53	......	......	......	......	......	......	......	......
48	......	51	52	53	54	55	56	......	......	......	......	......	......	......
49	......	53	54	55	56	57	58	......	......	......	......	......	......	......
50	......	......	56	57	58	59	60	61	......	......	......	......	......	......
51	......	......	59	60	61	62	63	64	......	......	......	......	......	......
52	......	......	62	63	64	65	66	67	......	......	......	......	......	......
53	......	......	......	66	67	68	68	69	70	......	......	......	......	......
54	......	......	......	68	69	70	71	72	73	......	......	......	......	......
55	......	......	......	......	72	73	74	75	76	77	......	......	......	......
56	......	......	......	......	76	77	78	79	80	81	......	......	......	......
57	......	......	......	......	......	81	82	83	84	85	86	......	......	......
58	......	......	......	......	......	85	86	87	88	89	90	91	......	......
59	......	......	......	......	......	89	90	91	93	94	95	96	98	......
60	......	......	......	......	......	......	94	95	97	99	100	102	104	105
61	......	......	......	......	......	......	99	101	102	104	106	108	109	111
62	......	......	......	......	......	......	104	106	107	109	111	113	114	115
63	......	......	......	......	......	......	109	111	112	113	115	117	118	119
64	......	......	......	......	......	......	......	115	117	118	119	120	121	122
65	......	......	......	......	......	......	......	117	119	120	122	123	124	125
66	......	......	......	......	......	......	......	119	121	122	124	126	127	128
67	......	......	......	......	......	......	......	......	124	126	127	128	129	130
68	......	......	......	......	......	......	......	......	126	128	130	132	133	134
69	......	......	......	......	......	......	......	......	129	131	133	135	136	137
70	......	......	......	......	......	......	......	......	......	134	136	138	139	140
71	......	......	......	......	......	......	......	......	......	138	140	142	143	144
72	......	......	......	......	......	......	......	......	......	......	145	147	148	149

Weights and measures should be taken without shoes and in only the usual indoor clothes.
[Table copyright by Child Health Organization.]

A GUIDE TO THE PROPER RAT-PROOFING OF BUILDINGS.

By C. E. HAUER, Chief Sanitary Inspector, United States Public Health Service.

Since bubonic plague is primarily a disease of rodents, and only secondarily a human infection, the destruction of the rodent population, as far as possible, is a measure of first importance in any plague-eradicative campaign. This measure is usually carried out in three ways; namely, intensive trapping, poisoning, and rat-proofing of all buildings. The first two measures are most important in the early part of a campaign, and by these means thousands of rodents may be quickly destroyed. Yet, only temporary results can be expected from these two methods. On the other hand, the slower process of rat-proofing gives more lasting results. However, it must be remembered that no community as yet has ever been freed of rodents by any measure or combination of measures, and the most that can be expected is to keep the rodent population at an irreducible minimum.

The first step to be taken in a community is, of course, the passage of a rat-proofing ordinance; then, intelligent supervision of all work by a man familiar with the habits of rats and possessing a thorough knowledge of the construction work which should be instituted. A properly drawn rat-proofing ordinance contains many details which must be minutely followed in order to build out the rats effectively and permanently. Experience has shown that contractors not familiar with the reasons for these details will invariably regard them as trivial or even foolish and, consequently, neglect to carry them out. A number of years' experience in rat-proofing work has impressed me with the disadvantages, ineffectiveness, and financial losses resulting from improperly supervised and a cheap grade of rat-proofing. Aside from building out rats and the improvement of the sanitary conditions, rat-proofing, well done, is always a good investment and will enhance the value and appearance of any property. With these facts in mind, the following information and the accompanying figures are submitted to afford possible assistance to those who may engage in such work, and as supplementary data to rat-proofing ordinances.

For rat-proofing purposes it is best to divide all buildings into two main divisions according to their uses: Class A and Class B. Class A includes food depots and all buildings where foodstuffs are stored, handled, or prepared. Class B includes residences and all other buildings not in Class A.

Class A Buildings.

Class A buildings may be further divided for convenience into the following classes:

1. Frame Buildings:
    - *a.* With little or no elevation.
    - *b.* With good elevation.
    - *c.* Buildings used in part as Class A and part as Class B.
2. Brick, Concrete, Hollow Tile, Cement Block Construction.
3. Freight Depots.
4. Wharves and Docks.

1. FRAME BUILDINGS.

(*a*) The most effective way to treat this class of building is to install a concrete floor properly protected by an area wall. Figure 1 shows a section of a building of this type with the weatherboarding removed for a short distance, exposing the studding and the double-wall space, which, coupled with the dark area under the building, offers very good rat harborage. In Figure 1, A indicates the open space between the floor joists, which gives rats access to double walls; B shows rat cuts in interior walls at the floor line, the usual place of entrance from beneath the building. The extremely low elevation of most buildings of this type prevents dogs and other natural enemies of the rat from going beneath the buildings and, with the absence of light, offers the rodents fine harborage, as is evidenced by the number of burrows found when floors are removed preparatory to rat-proofing.

Buildings of one or two stories in height can be worked by shoring or bracing along one side, as shown in Figure 2; 2 by 6's are very suitable for this work. Having securely fastened the shores (E, Fig. 2), the weatherboarding and inside wall covering are removed for a distance of about 2½ feet above the sidewalk. The wood floor is then removed, as are the floor joists. Having determined the height of the finished concrete floor, the studding is cut off and the sill raised so that the distance from the bottom of the raised sill to the top of the finished concrete floor is at least 12 inches. This is shown at B, Figure 2; A shows the appearance of sill, floor joists, and studding when exposed by the removal of the weatherboarding and before the studs are cut off.

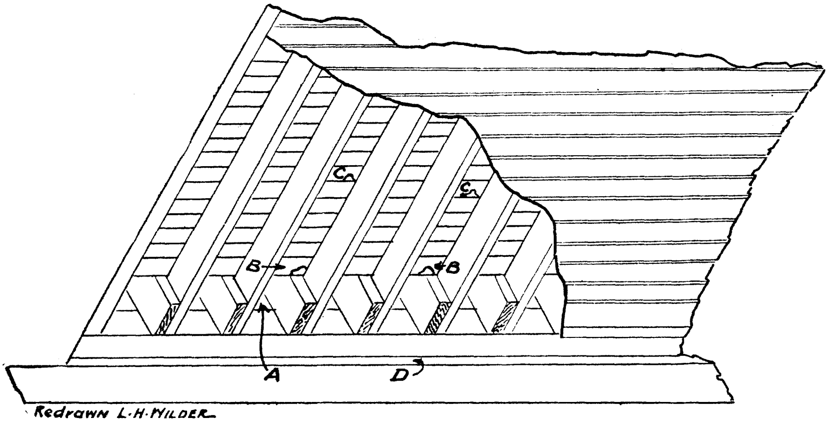

Fig. 1.

When the sill has been raised along the entire side and securely fastened to the studs, work can be started on the area wall. (It might be well to mention here that in localities where the buildings are subject to great wind pressure, bolts embedded in the area wall and passing through the sill will add materially to the strength and stability of the structure.) The trench for the area wall should be excavated immediately below the sill to a depth of at least 2 feet below the surface of the surrounding soil. The wall should be constructed of concrete or brick at least 4 inches thick (preferably 6) and must fit closely under the sill as shown at C, Figure 2. When a wall has set sufficiently to bear the weight of the building, the shores are removed and the inside and outside wall covering is replaced to close tightly the double space above the sill. Each of the other sides of the building is treated in the same manner. At doorways, the area wall, of course, need only be brought to the floor level. A very important point to remember in rat-proofing any structure by concrete floor and area wall is to get a tight seal between the floor and the wall. Never under any circumstances let a sill or a portion of a sill remain to be buried in the concrete floor. This sill will rot out in time and leave openings leading under the floor, which rodents will not overlook. To avoid this condition is one of the main reasons for cutting off the studding and bringing the sill above the floor level.

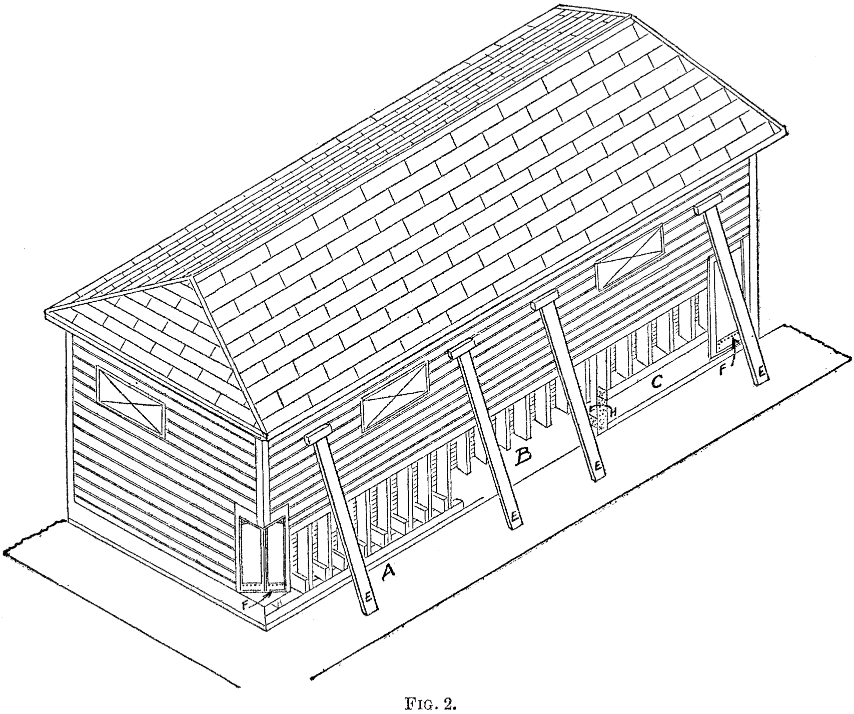

Fig. 2.

The concrete floor, D, Figure 3, should be at least 3 inches thick, with a topping or finish of cement at least 1 inch in thickness. The correct mixture for the floor and area wall should not be weaker than 1 part cement, 2½ parts sharp sand, and 5 parts gravel or broken rock. Where cinders are used as an aggregate, the cement content should be increased. The finishing coat should be 1 part cement and 1 part sharp sand.

The concrete floor eliminates the rat harborages beneath the building, and the area wall serves the threefold purpose of (1) providing the foundation for the structure, (2) protecting against ingress of rodents beneath the floor, and (3) preventing rodents from entering the double walls along the floor line (the usual point of entrance) if the concrete wall is carried 12 inches above the concrete floor.

As a further protection to double walls, all parts of such walls against which goods are to be piled or shelves built, should be covered with galvanized sheet metal or wire of ½-inch mesh. This prevents rodents from entering the double walls above the area wall protection, as at C, Figure 1. The ideal covering for interior walls when studded is the ornamental steel, which can be bought in a variety of designs.

A good plan in food depots is to construct within the rat-proof building a wire cage of ½-inch mesh, in which foodstuffs (such as rice, flour, feed, etc.) offering great attraction to rats can be kept. While it is possible to rat-proof a building, it should be borne in mind that no amount of rat-proofing will keep rodents from entering the open doors and harboring in the stock. The first infected rodent trapped in a plague campaign in a southern city came from a building of concrete construction throughout. On examination it was found that in addition to doors having been left open after dark, a number of small cellar windows, opening at or near the ground level, were unscreened.

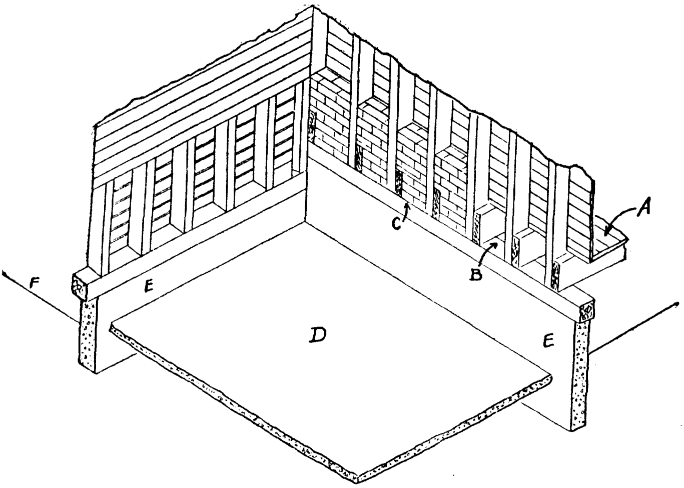

Fig. 3.

Goods should be piled at least 1 foot from the walls and should have as many passageways as is possible between piles.

Where a building has two floors, the ceiling on the ground floor should be removed, or, where this is impracticable, the floor margin of the second story should be flashed with a continuous sheet of galvanized metal to prevent rats from entering the ceiling. This flashing should extend 6 inches up on the wall and the same distance out on the floor and should be fastened with nails spaced an inch apart. All outside doors should be covered along the bottom with a strip of galvanized metal at least 6 inches wide (Fig. 2, F).

(*b*) Where city ordinances do not prohibit wood flooring in food depots, the building, if elevated at least 2 feet, can be rat-proofed in the following manner:

Remove all weatherboarding around the entire building to a height of 2 feet. Fill in the space above the sill with brick laid in cement mortar to a height of 1 foot above the floor level, as shown at B, Figure 4. All double partition walls within the buildings should be treated in like manner. Cover the entire floor area with 18-gauge ½-inch mesh galvanized wire. Cover the wired area with another tongue and groove floor at least 2 inches thick.

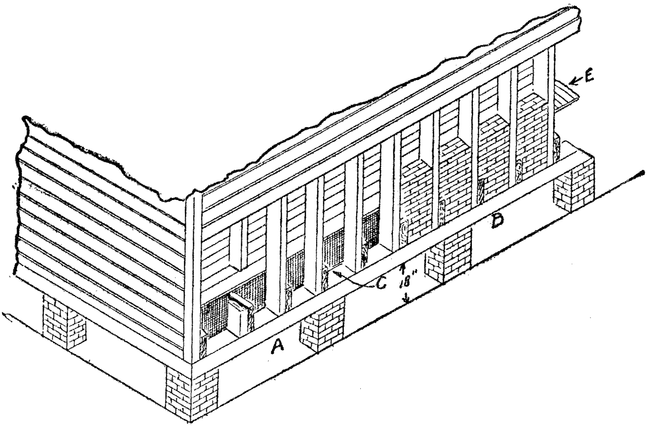

FIG. 4.

The ground area under buildings should be kept free from boxes, rubbish, and other rat-harboring material. It is a good plan to wire between the piers of the buildings with wire of coarse mesh to prevent material from being placed beneath.

Doors, walls, etc., should be treated as specified in the foregoing section (*a*).

This form of rat-proofing at best should only be considered a temporary expedient and, all factors considered, is really more costly than concrete. In figuring the cost it should be remembered that inasmuch as the sills in a building of this class are 2 or more feet above the ground, the cost of stud cutting is eliminated in case the building is paved. In fact, the only real saving with this form of rat-proofing is in cases where the fill required for concreting the building is more than 4 feet. It should not be installed in buildings where vinegars and other acids are handled, as the liquid may get through the joints in the floor and attack the wire.

(*c*) In buildings used partly as Class A and partly as Class B, and where it is desired to keep the wood floor in a portion of the building, that portion to be paved should be treated as described in section (*a*), with the exception of the wall separating the wood and concrete floor. This wall requires special attention. Referring to Figure 3 it will be noted that on three sides of the building the highest floor level is the concrete floor, while on the fourth side the high floor is the wood floor next to the paved area. In order to prevent rodents from gaining access to the food depot from the Class B portion of building, it is necessary to bring the wall on this side 1 foot above the wood floor (A, Fig. 3). Where the floor joists of the Class B portion run parallel to the division wall, the studding can be cut off to the proper height, but where the joists are at right angles, as shown in Figure 3, it is impracticable to cut the studs, and the space should be filled as shown. A shows the wood floor in the Class B portion; B shows the open space between the floor joists before filling; C shows the brick fill between the studding and around the floor joists, extending 1 foot above the floor level of the wood floor, A. The concrete floor is shown at D and the area wall at E, extending 2 feet below the soil level, F.

The Class B portion of building is rat-proofed in one of the methods for Class B buildings taken up further on.

2. BRICK AND CONCRETE BUILDINGS.

Brick or concrete buildings with concrete floors usually require but minor repairs to render them rat proof. Attention should be given to the proper placing of stock, the flashing of doors, and window screening. Where double ceilings exist, preferably they should be converted into single ceilings, or the upper floor margin flashed. All openings around the ceiling joists where they enter the brick or concrete wall should be closed, because, at times, pockets large enough to harbor rodents exist behind these joists. All false wood floors on the concrete should be removed or so relaid that the space between the two floors is not greater than ½ inch.

Hollow tile or cement blocks are not to be recommended for food depots, as a single opening in this material gives access to the large harboring spaces within the tiles or blocks.

3. FREIGHT DEPOTS.

Freight depots offer great attraction to rats. As goods of great weight are handled in this class of structures, the concrete floor should be at least 6 inches thick, and great care should be exercised to make the doors rat tight. As the doors of these buildings are usually sliding doors, a groove formed in the concrete floor and with the edges protected by angle iron, and doors properly flashed with metal, will make them rat proof.

Freight cars should not be left standing over night with the doors open.

4. WHARVES AND DOCKS.

Wharves and docks present the greatest problems encountered in rat-proofing, and they also offer one of the most important means for the transmission of rodent plague from port to port.

Sloping shore line, change in water level, poor bearing condition of soil adjacent to water line are all factors which combine to make the rat-proofing of docks not only costly but in many cases difficult. Wherever these structures are entirely over the water, they can be rat-proofed as Class B building. The majority of wharves, however, are built partly over land and partly over water. Figure 5 is an end section of this type. These wharves can be rat-proofed by constructing a concrete or creosoted pile bulkhead along the mean low water level and completing the compound by installing a concrete area wall along the other three sides to tie in with this bulkhead. This wall should extend at least 2 feet below the ground and come flush under the floor of the shore portion of the dock. The wood floor of this portion is then removed, the space (B, Fig. 5) filled in, and a concrete floor installed, sealing tightly to the bulkhead and the area wall.

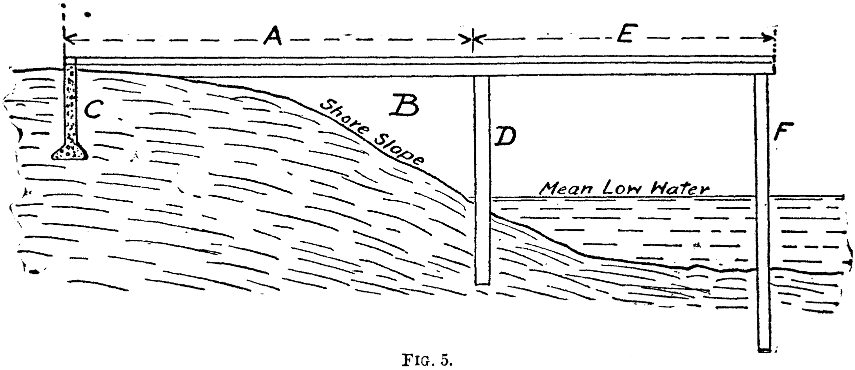

FIG. 5.

Where outer walls of the structure are double, the area wall should extend 1 foot above the finished concrete floor level.

In Figure 5, A is the portion of the dock over the shore; B is the space to be filled in; C is the area wall; D is the bulkhead; E is the portion of the dock over the water; and F is the piling.

Class B Buildings.

Class B buildings includes all buildings not food depots. As the greatest number of buildings in this class are dwellings, special attention will be given to them. They may be rat-proofed either by elevation or by area wall.

Elevation.—The best method of rat-proofing this type of building is by elevation. A building conforms to the requirements of elevation when it is on piers on at least three sides and the space from the sill to the ground is at least 18 inches (preferably 2 feet). At A, Figure 4, there is shown a portion of such a building with weatherboarding removed to show the double-wall space. This opening is rat-proofed by installing ½-inch mesh wire, 18 gauge, between the floor joists from the sill to the floor above. The first stud in the figure is cut away in order that the installation may be seen more clearly. The floor is shown at E. Galvanized iron, or wood 1 inch thick, is sometimes used to close this space, but this is not recommended for the following reason: Should rodents gain access to the double walls from the inside of the building, with the wall base so closed, they would find a very convenient harboring place on the dark ledge formed by the sill and the solid material used to close the pocket. Where wire is used, the rodents will not stay on the sill, should they gain access, as wire lets in too much of their great enemy—light. In short, the wire not only keeps the rodents out better than the wood blocking, but should they gain entrance, the chance of their harboring is reduced to a minimum by the illumination of the pockets. The following, in order of merit, are three methods of closing this space:

1. By brick fill (B, Fig. 4).
2. By closing with wire (A, Fig. 4).
3. By closing with wood, galvanized iron, etc.

All openings in the double walls, both interior and exterior, should be closed. Doors and windows should fit tight when closed. Where pipes enter the walls, the openings, if larger than the pipes, should be flashed with metal. Spaces beneath the building should be kept free from rubbish and other rat-harboring material.

Area wall.—Another method of rat-proofing Class B buildings, but one recommended only as a last resort, is by area wall. In this method, a concrete or brick wall at least 4 inches thick is installed around the entire building. This wall should extend at least 2 feet into the ground and upward to the sill of the building. The space above the sill should be filled as at B, Figure 4.

Dry rot, which attacks timbers, requires two main conditions for its growth—darkness and dampness. Both of these conditions obtain under a building rat-proofed by area wall, and in a short time, owing to this fungus growth, sills, floors, and floor joists rot out. This has, in many cases, created a rat menace much worse than that of the building in its original condition. The evil effects of dry rot can be reduced somewhat by installing a number of cast-iron ventilators (openings not greater then one-half inch) in the area wall for ventilation. For this reason, elevation is to be preferred to the installation of an area wall in rat-proofing this class of buildings.

Elevation is an investment which will bring financial returns in enhanced property value and reduced repair bills, to say nothing of a better appearance.

Compounds.—Where coal, junk, or other material is stored in great quantities, the elevation of this material is costly and impracticable. In such cases the premises can be rat-proofed by constructing a rat-tight compound. This is made by surrounding the entire storage yard with an area wall, such wall to extend at least 2 feet below the ground surface and about 3 feet above. The top of such wall should contain a longitudinal slot through the center, 1 inch wide. On posts placed immediately back of the wall, spaced on 8-foot centers, a galvanized iron fence is erected. This iron fence should extend at least 5 feet above the wall, with corrugations perpendicular to it, and with the lower edge resting in the wall slot. The slot is then filled with asphaltum to make a tight joint.

The weak point in this method is the difficulty in keeping the gates rat tight where railroad tracks enter the yard. Tracks at these points should have a good concrete foundation to prevent depression from heavy loads, and the gates should have a lower metal drop-panel, which is lowered when the gates are closed. This will make a rat-tight connection at the rails and the area wall between them.

Lumberyards and firms handling lumber and like material would do well to erect concrete piers throughout the yard, on which to stack their material. This is not only good rat-proofing but will eliminate a great deal of the waste that usually occurs when such material is piled on the ground.

The best method of rat-proofing for coal yards is to install a heavy concrete floor with an area protection wall.

Stables.—Stables, with their large supplies of feed and with their wood floors usually on the ground, offer feeding and harboring places for a large number of rodents. Where cost is of prime consideration, these buildings, when of open front construction, can be rat-proofed by the removal of the wood floor, leaving the ground bare.

The best method is the installation of a concrete floor and wall as previously described under the heading, Frame buildings (*a*).

The most important point about stables is the method of keeping the feed. All feed should be kept in metal-lined bins, and the mangers should be deep enough to prevent the spilling of feed, that is, about 16 inches.

Important Minor Details.

City rat-proofing ordinances are seldom sufficiently specific to cover all details that will arise. Nevertheless, upon these minor details largely depends the success of building out rats. Therefore the following directions should never be neglected:

Scale pits and elevator pits should have concrete floors, with side walls of the same material or of brick.

Outbuildings are rat-proofed in the same manner as main buildings of the same class. It is not good practice in rat-proofing to have trapdoors in buildings rat-proofed by area wall; but, where necessary, these should be of metal and so hung that gravity tends to keep them closed. They should also be provided with a snap latch. It is better to place them in the floor of the kitchen or other convenient place rather than in the area wall.

All lumber or loose material to be retained on the premises should be elevated on racks at least two feet above the ground.

Roof openings, especially in Class A buildings, should be closed by proper screening.

It is very important that all garbage be kept in metal containers with tight-fitting metal covers.

Dark closets under stairways, etc., should be flashed around the floor margin with galvanized metal.

All drains should be screened with a cast-metal grating.

All planking in yards, sheds, or alleyways should be removed from the ground.

Proper Use of Concrete.

Concrete when not properly mixed or mixed with poor aggregate will lead to all sorts of trouble. In a number of cases on record where rat runs were covered by concrete made from unscreened cinders full of ash, the rats came through the defective material. Poorly constructed area walls will give rodents access beneath the paved floors.

Never mix concrete with too much water. When mixed, concrete should be a jellylike mass and never soupy. About 1½ gallons to the cubic foot of concrete is an approximate ratio.

Where porous aggregate is used, more water is necessary. It should be tamped in place.

When mixed by hand, it should be turned over a sufficient number of times to thoroughly coat the gravel with the cement-sand mixture.

In cold weather the materials should be heated before mixing; and after being placed, the concrete should be protected by covering it with straw or tarpaulins.

If clay is present in any quantity in the sand used, failure is almost certain to result.

The so-called 1:2½:5 mixture, consisting of one sack of cement, 2½ cubic feet of sand, and 5 cubic feet of gravel, will give approximately 5.5 cubic feet of concrete.